

REMARKS

Claim 27 has been amended to include the decimal points for the B, V and Ca contents set forth in original Claim 27 and include a lower limit of 0.002 for Ti as disclosed at page 8, line 13 of the specification.

Claim 27 stands rejected under 35 USC §102(b) as allegedly being anticipated by Japanese Patent Publication 6-287640 ("Japan '640"). The reasons for the rejection are set forth in paragraphs 2-3, on page 2 of the Official Action. The rejection is respectfully traversed.

Claim 27 sets forth a method of manufacturing an ultra-low carbon steel sheet in which molten steel having a chemical composition including, in mass percent, C: at most 0.010%, Si: at most 0.5%, Mn: at most 1.5%, P: at most 0.12%, S: at most 0.030%, Al: at most 0.080%, N: at most 0.0080%, Ti: 0.002% ~ 0.10%, Nb: at most 0.05%, B: 0-0.0050%, V: 0-0.05%, and Ca: 0-0.0050% is subjected to refining in a converter, secondary refining after refining in the converter, continuous casting, hot rolling, and then coiling, wherein at the time of the secondary refining, the molten steel is tapped into a refining vessel, a vacuum immersion pipe having an interior that can be adjusted to a negative pressure is immersed in the molten steel in the refining vessel, and a stirring gas is blown into the molten steel.

The combinations of features recited in Claim 27 and in the claims dependent thereon are not disclosed or suggested by Japan '640. In particular, whereas Claim 27 recites a method of manufacturing an ultra-low carbon steel sheet in which Ti is included in an amount of 0.002 to 0.10%, Japan '640 does not list Ti as an alloying element nor is there any example in Japan '640 of a Ti-containing steel.

Accordingly, Claim 27 and the claims dependent thereon are patentable over Japan '640.

Claims 28-34 stand rejected under 35 USC §103(a) as allegedly unpatentable over Japan '640, U.S. Patent No. 4,113,166 ("Olsson"), U.S. Patent No. 3,512,574 ("Taylor") or Japanese Patent Publication No. 2-672889 ("Japan '889"). The reasons for the rejection are set forth in paragraphs 5-10, on pages 2-4 of the Official Action. This rejection is respectfully traversed.

Initially, based on the comment in paragraph 10 of the Official Action "as evident by the secondary references" and the reliance on Japan '640 as the only cited reference disclosing the steel composition recited in Claim 27, the rejection appears to be based on the combination of Japan '640 in view of Olsson, Taylor and Japan '889 rather than over each reference individually.

As explained above, Japan '640 does not suggest the method recited in Claim 27 of manufacturing an ultra-low carbon steel sheet in which Ti is included in an amount of 0.002 to 0.010%. Olsson, Taylor and Japan '889 are only cited in the Official Action for method features (see paragraph 10 of Official Action) and thus do not cure the deficiencies of Japan '640 with regard to the recited steel composition. Accordingly, Claim 27 and the claims dependent thereon are patentable over Japan '640 in view of the secondary references.

Claims 28-30 stand rejected under 35 USC 112, second paragraph, for the reasons set forth in paragraphs 12-16, on page 4 of the Official Action. Claims 27 and 28 have been amended to address the Examiner's comments. As such, withdrawal of this ground of rejection is respectfully requested.

It is submitted that the differences between the claimed subject matter and the prior art are such that the claimed subject matter, as a whole, would not have been obvious at the time the invention was made to a person having ordinary skill in the art.

In view of the foregoing, it is submitted that the present application is in condition for allowance and such action is earnestly solicited.

Respectfully submitted,

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